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COMMUNITY BASED STUDY ON KNOWLEDGE ASSESSMENT AND DETERMINANTS OF COPD

Sini Joseph[1], A. Vikneswari*[2], V. J. Divya[3], Rajesh Singh Bista[4]

[1]PG Student, Griffith College, Dublin, Ireland.
*[2]Associate Professor, Department of Pharmacy Practice, Bharathi College of Pharmacy, Mandya, Karnataka, India.
[3]Hospital Pharmacy Incharge, Medigreen Hospital, Thrissur, Kerala, India.
[4]PG student, Murdoch University, Perth, Western Australia.

***Corresponding Author: A. Viknswari**

Associate Professor, Department of Pharmacy Practice, Bharathi College of Pharmacy, Mandya, Karnataka, India.

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ABSTRACT

Respiratory diseases are an important reason for mortality worldwide. With demographic changes within the developing world and a few changes occurs in health care system, education, awareness and financial gain, the burden of communicable diseases is probably going to minimize, but the burden of chronic respiratory diseases (CRDs) like as COPD, bronchial asthma and lung cancer are probably to worsen due to increasing tobacco use, environmental hazards and ageing population. This study was conducted in General population those who are the residence of Mallavali to mandya region and physician diagnosed COPD patient details were collected from Udaya health care centre at K.M.Doddi. A total number of 155 patients' details were collected. Among this 155 patients, 68 patients knowledge assessment questionnaires, 87 patients SpO2 value and BMI were measured. Knowledge of different domains was analyzed. 31.12% of patients have disease knowledge, 58.82% of patients have knowledge about their medications, 60.29% have knowledge about self management of their disease and 30.51% patients have knowledge about exercises to be done to improve quality of life, 83.82% patients have knowledge about the diet to be taken and 33.82% have knowledge about risk factors to be avoided due to disease. Our study reported that 44.83% of patients were found undernourished. SpO2 measurements were obtained from 87 patients and they were categorized into different groups based on their SpO2 values. A total of 51.72% of patients are having SpO2 value below 92% (severe) and 28.73% of patients have SpO2 values below 92 - 95% (moderate) value. There is a significant association between BMI and SpO2 values.

KEYWORDS: COPD, Knowledge assessment, determinants.

INTRODUCTION

Respiratory diseases are an important reason for mortality worldwide. The international situation of diseases shows paradigm shift from communicable to noncommunicable diseases, such as chronic conditions like cardiovascular and chronic obstructive pulmonary disease (COPD), which are currently prime causes of death globally.[1] In India, as per information from special survey of deaths (2001-2003), distributed below the domain of sample registration system, that covered over 6,645 small areas altogether the states and union territories, the leading reason behind death within the age group higher than 20 years was cardiovascular disorder (25%), followed by respiratory disorder (20% - particularly COPD, asthma and tuberculosis [TB]).[2]

With demographic changes within the developing world and a few changes occurs in health care system, education, awareness and financial gain, the burden of communicable diseases is probably going to minimize, but the burden of chronic respiratory diseases (CRDs) like as COPD, bronchial asthma and lung cancer are probably to worsen due to increasing tobacco use, environmental hazards and ageing population.[3] COPD afflict many millions of adults worldwide and changing into one in every of the foremost serious and enervating disease. The burden of CRD was projected to account for nearly 4% rather than the world burden and nearly 8.3% rather than the burden of chronic diseases.[4]

64 million individuals suffer from COPD, a term that covers emphysema and bronchitis. COPD caused quite 3 million deaths in 2005. The total of COPD deaths is anticipated to extend by over 30% in the next 20 years; and WHO projects that it'll be the third leading reason for death by 2030. Nearly 3 billion people consider solid fuel for cooking, heat and light exposing them to dangerous indoor pollution that cause some 2 million deaths every year, primarily in low and middle income countries. Women and children are additional heavily affected as a result of they spend longer time at home than men. Dusts, chemicals (vapors, fumes and irritants),

the same as tobacco smoke are risk factors for occupational lung disease, bronchial asthma and COPD. CRDs bit each side of the lives of those affected and their families and communities. Preventable CRD is presently under-recognized, under-diagnosed, under-treated and insufficiently prevented.[5]

METHODOLOGY

This prospective study were carried out in Udaya health care centre, K.M. Doddi and five villages between Malavalli and Mandya (Ucchalagere, Halahalli, Karasavadi, Nelmakanahalli, Manigere).

Design of questionnaire & proforma

Assessment of patient's knowledge about the disease and its treatment are the key components for planning an effective educational intervention. The first step of our study was to design a suitable questionnaire to meet objectives of our study. The format contains the details such as name, age, gender, education, occupation, medication history, social history, treatment etc., and it consists of a series of question to evaluate knowledge and assessment of COPD condition. Based on expert reviews and content validity evaluation, a 34 - item questionnaire was designed and piloted. Items were added, modified and deleted based on the discussions during the various changes of development of questionnaire. A separate question format containing 25 items was prepared to assess smoking history, alcoholic consumption history, cooking fuel utilisation and BMI calculation. The entire questionnaires were prepared both English and Kannada (Local language).

Process of data collection

75 patients were approached and 7 were excluded because they did not meet the inclusion criteria. The researcher submitted the questionnaire to the respondent and explained the purpose of study. Some briefing about the questions in the questionnaire was also made to the respondents to help them get clear idea. The researcher collected the data individually including both knowledge assessment and COPD assessment questionnaire.

Measurement of SpO2 by using Oximeter

First the procedure was explained to the patients and ensure the probe is clean, dry and in good condition before applying to the patient (as per manufacturer's in instructions). Ask the patient to remove anything on the site that may impair the effective transmission of light *e.g*. nail varnish. The hand should rest on chest at the level of the heart rather than held in mid air. Fix the pulse oximeter in to the patient's middle finger and record the value of SpO2.

All the patients were subjected to full medical history, general and local chest examination. SpO2 saturation has acquired for every patient using a portable pulse-oximetry device. The percentage of haemoglobin oxygen saturation was measured after connecting the optical diodes on the patients' fingers. Each experiment was performed 3 times and the mean value was considered as the SpO2.[6]

Measurement of BMI

Anthropometric measurements were obtained from patients using a stadiometer for measuring height and a pre-calibrated weighing machine for measuring weight. The BMI was calculated later for individual patients using standard equation for BMI. The height of the subject was measured first by asking him/her to lean against the stadiometer. It was placed resting over the wall of examining room. The subjects were asked to stand with feet together and the occiput, back and heels touching the stadiometer scale. Then subjects were asked to look straight with line of vision parallel to ground. The height was measured and rounded off to nearest centimetres.

RESULTS

This study was conducted in General population those who are the residence of Mallavali to mandya region and physician diagnosed COPD patient details were collected from Udaya health care centre at K.M.Doddi. A total number of 155 patients' details were collected. Among this 155 patients, 68 patients knowledge assessment questionnaires, 87 patients SPO_2 value and BMI were measured.

A total of 155 patients were analysed in our study. Out of that 124 were males and 31 were females. The patients were categorised according to their age and sex. The maximum number of male patients is found in range of 60-69 years and minimum numbers of patients are found in 30-39 year age group. Whereas for female maximum number of patients are in 70-79 years age group and minimum in 30-39 year and 80 -90 age group (Fig.1).

Table 1: Patients Demographics characteristics.

Characters	No. Of Patients
Age (Mean ± SD)	63.21 + 11.26
Gender	
Male	127
Female	28
Social History	
Smokers	81
Ex- Smokers	37
Non Smokers	37
Alcoholic	21
Both Alcoholic and Smoker	14
Non Alcoholic	120
Disease Condition	
Only COPD	81
COPD with other illness	74
Occupation	
Farmer	139
Non Formers	16

Table 2: Mean age of patients.

Age	Male	Female.
Mean age	65.47	60.31
S.D	± 10.66	± 13.86

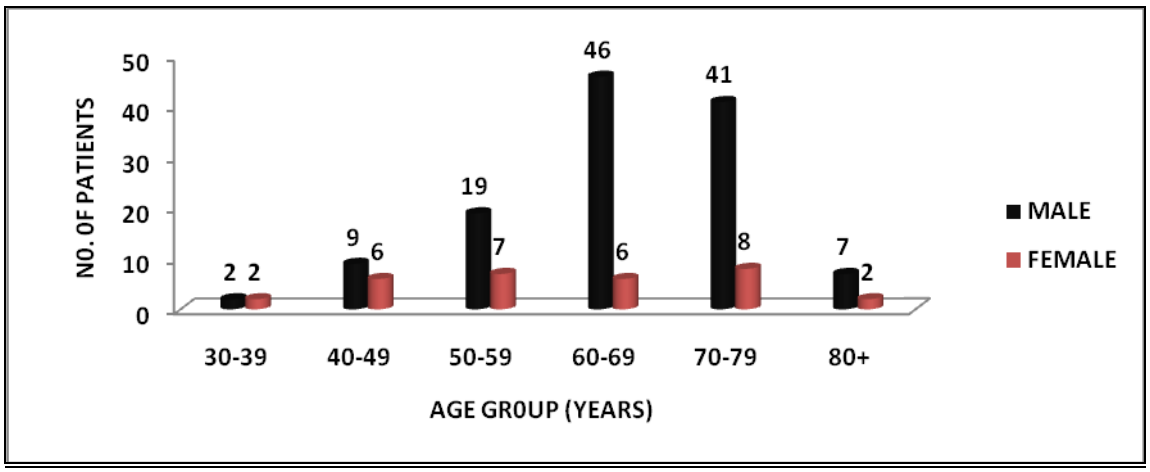

Fig 1: Age wise categorisation of patients.

Knowledge assessment

A total of 68 patients were analysed for their knowledge on disease, medicines, self management, exercise, diet and risk factors involved. Out of 68 patients, 49 patients were males and 19 patients were females. The assessment of knowledge on different domains was done and following results were obtained (Table.3).

Table 3: Different domains and associated percentage knowledge.

Domains	% of Knowledge
Disease knowledge	31.12
Medicines	58.82
Self management	60.29
Exercise	30.51
Diet	83.82
Risk factors	33.82

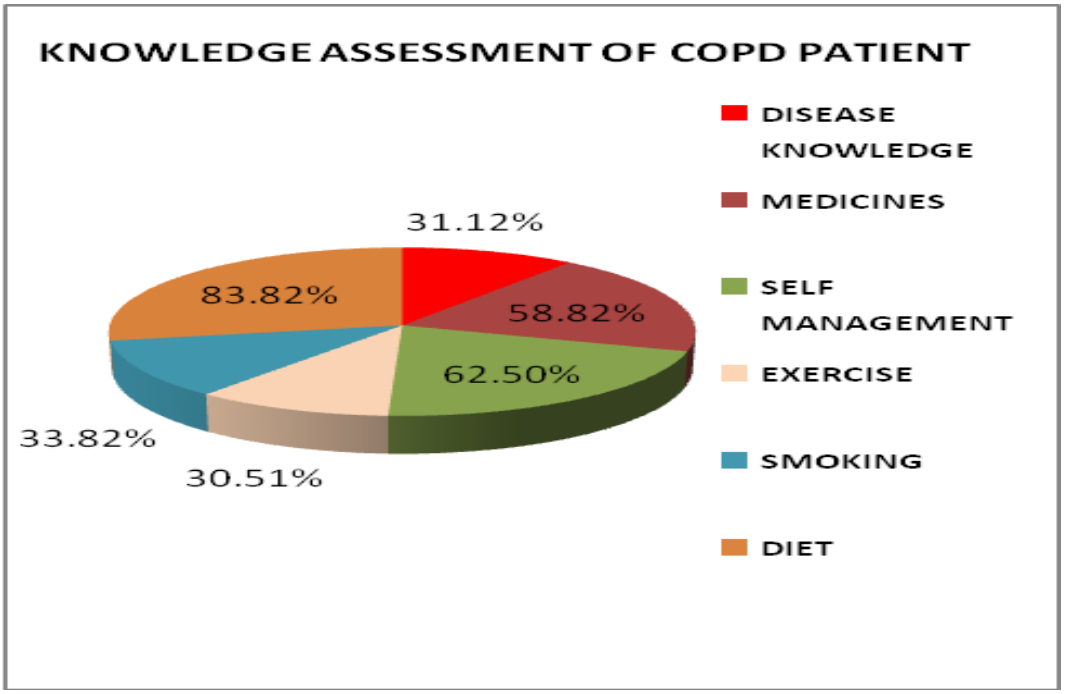

Fig 2: Knowledge assessment of COPD Patient

From the COPD assessment questionnaire more than 65% of patients were found having wheezing and tightness in the chest, shortness of breath, cough and phlegm, limitation of daily activities, and diminished confidence about doing things.

Table 4: Respiratory symptoms.

RESPIRATORY SYMPTOMS	% SEVERITY OF SYMPTOMS
Wheezing and tightness in the chest	83.08
Shortness of breath	68.52
Cough and phlegm	77.57
Limitation of daily activities	72.05
Diminished confidence about doing things	77.94

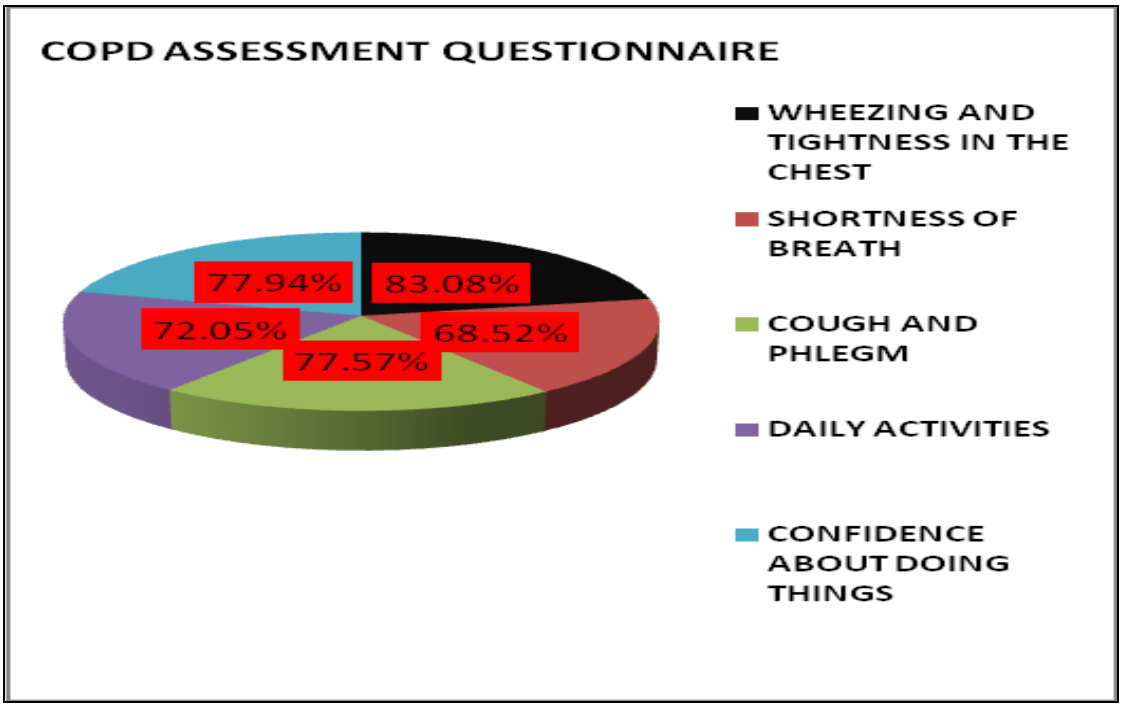

Fig. 3: Knowledge of Respiratory symptoms.

Categorisation of patients according to their BMI

Out of 155 patients 87 patients were accessed for their BMI measurement. The patients were categorized as undernourished (<18), normal (18-22.9), overweight(23-24.9) and obese (>25). Among 87 patients 29 male and 10 female were found undernourished and 7 male and 1 female was found obese.

Table 5: Categorisation of patientrs according to BMI.

BMI	Male	Female	Total	Percentage
<18	29	10	39	44.83%
18-22.9	24	5	29	33.33%
23-44.9	7	4	11	12.64%
>25	7	1	8	9.19%
Total	67	20	87	100 %

Determination of SpO2 values

Out of 155 patients, SpO2 measurements were obtained from 87 patients and they were categorised into different groups based on their SpO2 values. A total of 51.72% of patients are having SpO_2 value below 92% and 19.54% of patients have SpO2 values above 95% (Table.12).

Table 6: Categorisation of patients according to their SPO_2 values.

Sp02 value	Male	Female	Total	Percentage(%)
< 92	37	8	45	51.72
92 -95	20	5	25	28.73
>95	13	4	17	19.54
TOTAL	70	17	87	100

Correlation between BMI and SpO2 values

The association between Body mass index and SpO2 measurements of patients were evaluated. There is a significant association between BMI and SpO2 values.

Table 7: Correlation between BMI and SpO2 values.

BMI (Kg/m^2)	NO OF CASES	Sp02 MEAN	±S.D
<18.0	40	93.77	±6.15
18.0-22.9	37	94.76	±5.04
23.0-25.0	6	94	±2.83
>25	4	93.33	±2.495
TOTAL	87	93.965	±4.128

χ^2 =43.02 df=3, P<0.0001

DISCUSSION

Respiratory disease is a common problem encountered in routine medical practice. COPD commonly occurs due to smoking and environmental pollution. Chronic respiratory disease is one of the most common causes of disease burden, both globally and in India.[7] In recent years there has been increased emphasis on education of patients and their families in medical conditions. This has been driven in part by patients wishing to be better informed about their condition and in part by the recognition by health professionals that self management is important to patients. When designing the questionnaire, we considered the available methods for testing the knowledge. For example, we considered multiple yes or no questions to which there is more than one correct answer. Construction of these is not easy because it is important to have sufficient incorrect options. Open-ended questions are more flexible and allow evaluation of beliefs rather than facts. Very clear guidance on answering the question and detailed answer keys for marking the question are needed.

The time for completion of the questions and the complexity of scoring rules them out for routine use. We therefore decided that yes or no questions would be more acceptable for patients, would be easy to score and therefore would be suitable for routine use in both clinical and research situations. The topics chosen for testing were those that a patient with COPD might reasonably be expected to have the appropriate knowledge. Discovering what patients really know or are unsure about or think they know, but in fact do not know is of fundamental importance. Based on expert reviews and content validity evaluation, a 31 item questionnaire was designed. Items were added, modified and deleted based on the discussions during the various changes of development of the questionnaire. A separate question format containing 25 items was prepared to assess smoking history, alcohol consumption history and cooking fuel utilization.

Socio-demographic findings of our study revealed that 33.54% of respondents were between the age group 60-70 years. Most of the respondents (80.63%) were illiterate and 1.25% were studied UG and it is similar to the findings from Ansari M. et al., he states that 43.0% subjects were from the age group between 61-70 years and 80% were illiterate and 20% were literate.[8] Regarding occupations, in our study shows that more than half of the respondents were farmers 57.73% and a similar finding given by Shrestha and Shakya[9] reported 57% were farmers and Subba et al.,[10] reported 51.1% were formers. In our study 80% were male whereas 20% were female and a similar finding reported by Jun et al.,[11] states that 55.2% male and 44.8% were female.[4]

Our study showed that 45.31% of respondents were history of COPD more than 5 years and consistent finding by Subba et al., (48.4%) and P. Hernandez et al., (50%).[10,12]

A similar study of 100 samples 12% had good knowledge about breathing exercises, 49% had an average knowledge and 39% of samples had poor knowledge. In our study reveals that 32.50% had knowledge about exercise and disease knowledge score is 43.85%.

The assessment of knowledge on different domains was done and the following results were obtained. Only 43.85% of CRD patients are having knowledge about their disease. Above 54 % of patients are having knowledge about their medicine. 32.50% of patients are having the knowledge about exercise and 50.31% of patients know about the risk factor of the disease condition. (Table 5.6, Table 5.7 and Fig. 5.5).

Several studies have documented the association between nutritional depletion and weight loss in patients with established COPD, concomitantly, there is a lack of prospective and retrospective studies on this subject in our country. In our study the statistical analysis had been shown that the underweight was more common among COPD group and obesity was more in asthma group. There was a significant relationship between the underweight group and low BMI and with the increase in COPD severity.

Our study report was similar to the study conducted by Kassim M. Sultan et al., he found that the underweight was more common in COPD group than that found in the control group and associated with more severe stages of COPD and in current smokers than in ex-smoker and with an increase in age, but there is no significant difference between gender and nutritional status. This study concluded that weight loss is a prevalent condition in patients with COPD and BMI can be used to assess this relationship. There was an interaction between smoking habits and BMI in COPD patients.[13] With regard to the association between COPD and low BMI, researchers have previously suggested that low BMI was secondary to COPD and could be attributed to the systemic inflammation, imbalance of oxidative status and tissue hypoxia present in COPD patients. Another study concluded that there was a significant relationship between low BMI and COPD and it is statistically significant in which low BMI is associated with more severe COPD.[14] Another similar study concluded that BMI was significantly lower in COPD patients; BMI was also significantly lower in smokers than in non-smokers and BMI decreased with the increase of the stages of COPD. The lower BMI was strongly associated with COPD, possibly as a risk factor for COPD independent of smoking and a potential predictor of COPD severity.[15, 16, 17]

A study done by Harik-Khan has indicated that men with a low BMI are at increased risk of developing COPD.[18] Decreases BMI may be due to the lower caloric intake by cigarette smokers and may contribute to low BMI with the subjects were more susceptible to COPD. However, smoking-induced low caloric intake cannot completely account for low BMI because the association of leanness with a higher risk of respiratory mortality was also observed in non-smokers (never smokers). Hence, weight loss in COPD is unlikely to be due to simple malnutrition.[19] The association between COPD stage and BMI category revealed that with increasing COPD stage the proportion of subjects with undernourished BMI status increased significantly.

Pulse oximetry is mainly helpful when the symptoms are deteriorating because of severe airflow obstruction (FEV_1 % predicted < 50%). This is consistent with the findings of previous studies indicating that the rate of tests with SpO2 < 92% increases when the FEV_1% predicted value is < 50% in stable COPD patients.

The initiation of long term oxygen therapy should be based on the oxygen saturation values of the patients. Thus a utilization of measurement of oxygen saturation in therapy can clearly indicate the time at which oxygen therapy must be initiated or need for referral to the hospital in case of acute exacerbations. The oxygen therapy in patients is found to increase their longevity of life in patients, according to different studies carried out. The association between Body mass index and SpO2 measurements of patients was evaluated. There was a significant association between BMI and SpO2 values.

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